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ABSTRACT

The New York State Education Department's Center for Learning Technologies was developed in February of 1982 with a mission to provide assistance to educational and cultural institutions to ensure effective implementation of the new technologies. This paper describes the concept of inservice training using technology at the national and state level, and includes a description of the Center for Learning Technologies' Training Program. The subject is divided into three categories--national issues, state issues, and staff development, and data on the growth of technology in education, particularly computers is provided first. Several important propositions are then highlighted: (1) technology is expanding rapidly into a variety of learning settings, including schools, colleges, libraries, and homes; (2) when technologies are integrated into the curriculum by highly skilled professionals, enhanced learning can take place; and (3) a tremendous need exists to address the problem of both preservice and inservice teacher education if technology implementation is to be a successful and long term innovation. Developments on the national and state level are presented that detail actions taken to improve both technological facilities and inservice (professional development) training. The paper concludes with information on funding for 14 to 20 centers throughout the state which will provide professional support services to teachers in the use of new learning technologies. (JB)

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AN AGENDA FOR TECHNOLOGY INSERVICE: STITCHING THE PIECES TOGETHER

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I. Introduction

The New York State Education Department's Center for Learning Technologies was developed in February of 1982 with the mission to provide assistance to educational and cultural institutions to ensure effective implementation of the new technologies. This paper summarizes a presentation entitled "An Agenda for Technology In-Service: Stitching the Pieces Together" given by two Center staff members.

The issue of technology inservice training will be described at the national level and New York State level and will include a comprehensive description of the Center for Learning Technologies' Training Program.

II. National Issues

The role of the federal government in education has usually been determined by impending crises, national welfare and unmet needs. Federal initiatives have guaranteed free education to the nation's population, promoted equal access to education, reduced excessive financial burdens wherever possible and encouraged research through the funding of such organizations as the National Institution of Education and the National Center for Educational Statistics. As learning technology and its appropriate use continues to emerge as a major national concern, it is anticipated that federal legislative action will occur in the near future.

Recent research supports the growing emergence of instructional technologies and the role of effective staff development to ensure its successful use.

Talmis data indicates that there will be a tremendous growth in installed K-12 computers from the current level of 1/2 million systems to over 2 million systems by June of 1988. (Figure 1) Microcomputer software sales are also projected to grow from a current level of $100 million to over $300 million by 1988. (Figure 2) Not only will there be more hardware and software, but also, the trend toward more college student required to obtain computers and fewer but more dominant software publishers is being observed.

Market Data Retrieval (Fall, 1983) statistics reveal that 86% of senior high schools, 81% of junior high schools and 67% of elementary schools use microcomputers for instructional purposes. There are on an average 11 microcomputers in high schools, 7 in junior high schools and 3 in elementary schools. In the postsecondary area, there is a growing number of courses being offered by telecommunications, computer laboratories are increasing, incubator and high technology programs are developing and administrative applications are using technology to increase efficiency. Public libraries, the traditional information storehouses of communities, are now purchasing microcomputers and software, loaning them to citizens and offering instruction as well.

Turning specifically to the home market, Talmis data indicates that by 1988 there will be 60 million home microcomputers. (Figure 3) Of particular interest to educators, a recent Gallop poll indicated that two of the three most frequently cited uses of home computers were "a child's learning tool" and "an adult learning tool." The phenomenom of increased home computers used for learning purposes is further emphasized by Talmis statistics which reveal that 79% of current owners indicate that the primary computer use was to "help children develop/improve skills learned in school." It was also revealed that 77% of those planning to buy microcomputers for the home cited the same reason when considering purchase.

The message is clear, the depth and breadth of the technological advance across a great number of our educational and cultural institutions, not to mention our own homes, is providing a new meaning to the "information society" and the learning process. Not only is computer use proliferating in new settings unaccustomed to technology, but also, the nation is witnessing the emergence of a variety of new technologies being used more frequently by individuals of divergent backgrounds. Interactive video and videodisc technology, online information services and telecommunications capability multiply learning settings, integrate applications and expand the traditional role of our learning and cultural institutions.

What does the technology influx mean for the nation's educational professionals who are responsible for its successful implementation and the educational organizations where they work? Although there are few, if any, examples where applications of technology have improved school system productivity, research studies have supported the contention that well-designed and integrated instructional technology can lead to an increase in both student (Wilkerson, 1980) and teacher (Heinich and Ebert, 1976) productivity. The Congressional Office Technological Assessment (1982) argues that if properly employed, information technology could be invaluable for education. It may be the only feasible way to supplement teaching capability in schools faced with reduced staff and larger class sizes; to provide alternative instruction to alleviate the stress of the math and science teacher shortage; to provide education and training over time and distance; to address different learning strategies and to improve the communication ability to foreign and handicapped students.

According to Duttweiler (1983), applications of educational technology in the United States are primarily add-on inputs to enrich student experience. He suggests that technology is being used as an "adjunct to traditional classroom teaching -- for drill-and-practice in elementary schools and for programming at the secondary level." One of the major barriers to comprehensive technology integration with the curriculum is the lack of professional knowledge and computer skills. One of the conclusions drawn by a review of two decades of computer-based instruction (Kearsley et. al., 1983) was that educational innovation is particularly difficult

because of the established nature of the institutions and roles provided. "To use the popular jargon, many of the teachers are not computer literate" status Bozeman (1984). This lack of knowledge and skills causes inconsistency between the technological advances of our society and that of our nation's schools. Telem (1984) further substantiates this problem with the following comment; "the fast penetration of computers on the one hand, and the paucity of expertise in the computer field on the other, are opposing phenomena which endanger their proper introduction and use in schools."

The Kearsley et. al. report (1983) also points out that teachers have traditionally been trained to deliver content in a group setting and are not prepared to provide individual tutoring on content delivered by a computer. Teachers are trained in colleges and universities where the focus of teacher education is usually in specific content areas and not in problem-solving skills necessary for computer use. An Electronic Learning 1983 article which surveyed the states revealed that only two states require inservice education related to learning technologies. It is interesting to note that these two states only represent 1% of the K-12 student population in the United States. This same survey also cited that fact that only 8 states require educational technology preservice education and that those states represent only 3% of the K-12 population. Both preservice and inservice professional development programs lag behind the technology expansion currently facing schools.

Recent information and data summarized here and elsewhere point to several issues;

- o Technology is rapidly expanding into a variety of learning settings including schools, colleges, libraries and homes.
- o When technologies are integrated into the curriculum by highly skilled professionals, enhanced learning can take place.
- o There is a tremendous need to address the problem of both preservice and inservice teacher education if technology implementation is to be successful and long term innovation.

There are several developments on the national horizon which provide hopeful clues that the current administration and government also perceive these problems and are planning to address and solve them.

1. The New York State Board of Regents has recommended 7 major actions steps to the federal government. Two of these include increased funds to maximize the impact of technology and to increase the availability of technology training for educational staff.
2. President Reagan's 1985 educational budget includes funds for improved computer instruction. Chapter II funds will be increased to $686 million in fiscal year 1985 compared to

$45 million in 1984. The National Institute of Education will get the largest portion of government money for technology. Schools will be able to use Chapter II money for hardware, software and staff training.

3. The National Urban League, in cooperation with the Xerox Corporation, will award 40 grants for microcomputers to 100 urban school districts.

4. IBM Plans to donate 90 computers to 26 urban school districts for Chapter I eligible schools only. These systems will be used in a model computer literacy program.

5. There are currently three bills before the House Elementary, Secondary and Vocational Education Subcommittee; H.R. 3750, H.R. 1134 and H.R. 4628. The most comprehensive legislation, introduced by Representative Timothy Wirth, D-Col., would provide $300 million over the next 10 years for microcomputer purchases and $20 million for teacher training. In addition, a federal information bank on software and computer use would be established.

These activities and potential actions will determine the extent of national commitment to educational technology implementation. It is interesting to note that all three bills before the House include provisions for technology training for educational professionals. Such a national agenda would establish a framework for states to follow and elevate learning technologies and their appropriate use to a high level of national priority.

III. New York State Issues

The State Education Department of New York is currently undertaking several initiatives relating to effective use of learning technologies and professional development. These initiatives pertain to all educational and cultural institutions served by the Department. The Board of Regents has emphasized the need for an effective professional staff development program for New York State. The provision of computer/interactive technology training is a central component of these actions.

The Regents' "Action Plan to Improve Elementary and Secondary Education Results in New York" recommends that school districts commit one to five days per year for staff development activities. They have also recommended the provision of State Aid to underwrite this activity and a thorough review of current requirements for provisional and permanent certification be undertaken. According to the Regents' Plan, staff development will focus on technology training due to the requirement that technology be integrated within the curriculum. The Department has also been requested by the Regents to study technology certification requirements.

The Regents' actions and recommendations concerning technology training go beyond elementary and secondary schools themselves. The "Bulletin of Regents' Statewide Plan for the Development of Postsecondary Education" has recommended that colleges, universities and the Department assist schools to implement learning technologies through appropriate preservice and inservice education courses. The Regents have also proposed that colleges and schools work together to enhance the provision of inservce training, particularly in the field of instructional technologies. Several institutions of higher education throughout New York are currently planning graduate degree programs in learning technologies.

In addition, the 1983 Regents initiatives for cultural education recommend that advances in technology have changed the role of library and information professionals. This role change has also occurred for the school librarian who now has computers in the library resource room as well as books and journals. The Regents cited the need for additional high-quality training and retraining programs to develop the skills necessary for handling the new information technologies and for serving special institute groups.

These recommendations did not fall on deaf ears. In April of 1984, the State Legislature appropriated significant funding for Fiscal Year 1984-85 related to educational technology implementation. The amount and breadth of technology funding are unprecedented for a single state. These monies, if planned and coordinated properly, will help to bridge the learning gap for educators and to insure the successful technology implementation goal which schools are aspiring toward. It is clear that legislative appropriations are necessary to support this venture. According to Bozeman (1984) "local schools do not engage in major change in isolation but reach out to larger educational organizations for ideas and resources." State Education Departments must, therefore, maintain a leadership role in this process.

While a significant level of funding has been appropriated for direct school purchase of technology hardware and software (approximately $25 million), it is the staff development monies which are of major importance to the theme of this paper.

Staff Development

The legislature has appropriated considerable funds for professional staff development such as inservice education, curriculum development, course planning and evaluation. The professional staff development activities can include instruction related to learning technologies. In fact, one area specifically identified for such training is Computer Literacy/Computer Technology.

Teacher Resource and Computer Training Centers

Current funding will provide for 14 to 20 Centers throughout the State which will provide professional support services to teachers in the use of the new learning technologies. Center activities will include training teachers to diagnose learning needs, develop instructional strategies, provide technology training to students, develop curriculum materials and use instructional technologies.

The leadership and coordination role of the State Education Department will be a crucial factor in the successful implementation of the Department's long range technology plans and current legislative appropriations. The following section of this paper details specific professional development initiatives of the Department's Center for Learning Technologies.